

What is claimed is:

1. An objective lens including an optical element constructed of a medium having an internal transmittance of at least 50 % at a wavelength of 300 nm when a thickness is 10 mm.
2. An objective lens according to claim 1, further including at least one diffractive optical element constructed of a medium used as a substrate, having an internal transmittance of at least 50 % at a wavelength of 300 nm when a thickness is 10 mm.
3. An objective lens according to claim 1, wherein the diffractive optical element is optimized to take advantage of a fluorescent wavelength.
4. An objective lens according to claim 1, further including at least one cemented lens component made up of lens elements having media of different refractive indices and Abbe's numbers.
5. An objective lens according to claim 1, wherein an NA of the objective lens where correction for aberration is made and an NA of the objective lens where the effective diameter is determined are different from each other to satisfy the following condition:

$$5 \quad \text{NAe} > 1.5 \times \text{NAc}$$

where NAe is the NA of the objective lens where the effective diameter is determined and NAc is the NA of the objective lens where correction for aberration is made.

6. An objective lens according to claim 1, constructed as a water-immersion objective lens in which the NA of the objective lens where the effective diameter is de-

terminated is at least 0.6.

7. An objective lens according to claim 1, wherein an optical path length extending along an optical axis is 20 mm or less.

8. An objective lens according to claim 1, wherein group delay dispersion relating to an axial ray of light is 1000 f sec^2 or less.

9. An objective lens according to claim 1, wherein the medium is quartz or fluorite.

10. An objective lens according to claim 1, comprising, in order from an object side, a plano-convex lens made of quartz, with a convex surface facing an image side; a positive meniscus lens made of quartz, with a convex surface facing the image side; a cemented doublet of a negative meniscus lens made of quartz and a biconvex lens made of fluorite; and a diffractive optical element.

11. An objective lens according to claim 1, wherein a wavelength region of the objective lens where correction for aberration is made is a near-infrared region.

12. An objective lens according to claim 1, wherein correction for aberration is made in accordance with each wavelength region which is a near infrared region and has a bandwidth of at least 30 nm, and a best position in each wavelength region varies.

13. An objective lens according to claim 1, exclusively used in a multiphoton microscope.

14. An objective lens according to claim 5, wherein a region from a center of a diffractive optical element to the numerical aperture NA_c is different from a region from the numerical aperture NA_c to the numerical aperture NA_e in diffraction efficiency or focal length of the diffractive optical element.